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ABSTRACT

A pilot study comparing Individualized Education Programs (IEPs) generated with the assistance of the UNISTAR I microcomputer software program and teacher-written IEP is briefly described, and an IEP is appended. In addition, the time and costs associated with the development of IEPs and the interest in the application of microcomputers to develop and write IEPs are mentioned, and the UNISTAR I IEP program is briefly described. The study employed 12 randomly-selected teacher-developed IEPs from the 1981-82 school year at three elementary schools in the Charlotte-Mecklenburg School System, North Carolina. Identification information and present functioning-level information for each of the 12 students were taken from the IEPs and used to generate 12 microcomputer-assisted IEPs using the UNISTAR I software program. Teachers rated the UNISTAR I microcomputer-generated IEPs significantly higher across each of the categories of the "Checklist for Documenting Appropriateness of the IEP." The UNISTAR I IEP program, which is used for learning disabled students at the elementary and junior high school levels, covers all requirements and provides the following: an intraindividual difference chart, a list of present functioning level data, the option to include goals and objectives in 11 academic/developmental areas, and a bank of about 600 annual goals and short-term instructional objectives. The appended computer printout of the sample IEP includes goals and objectives at the present functioning level, as well as a sequence of goals and objectives for the remainder of the year, and sometimes, for one additional year. (SEW)

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COMPARISON OF MICROCOMPUTER-GENERATED IEPs AND TEACHER WRITTEN IEPs: A PILOT STUDY

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ED232386

The implementation of Public Law 94-142 requires that the nation's public schools develop an individualized plan of instruction for every pupil that is identified and placed in a special educational program. This requirement is based on sound educational and instructional knowledge and practice. However, the implementation of the IEP in the public schools has not been as easy as our educational leaders thought. An appropriate and usable IEP takes a great deal of professional time; time to interpret test results; time to review the intra-individual differences within the pupil's achievement levels and skills; time to analyze the pupil's strengths and weaknesses; and time to select and/or write annual goals and short-term instructional objectives.

The time and costs associated with the development of IEPs were examined under a government contract by Price and Goodman (1980) during the 1977-78 school year. Seventy-five randomly selected special education teachers participated in the study by recording the time they spent on IEP activities for 804 students. It was found that the teachers devoted an average of six hours and 26 minutes on each IEP, with an average cost of $66.81. Allowing for inflation and increasing costs, the cost estimate for 1983 based on the 1978 data would be approximately $100 per student. Thus, a school system with 1000 identified exceptional children is spending $100,000 per year in teacher time alone to generate IEPs.

With the rapid growth of the use of microcomputers in the public schools, there has been an increasing interest in the application of this new technology to develop and write IEPs. Much of this interest has grown out of the need to cut costs in a time of shrinking financial support and increasing costs. Recent articles by Wilson (undated), Brown (1982), and Bennett (1982), support the feasibility of using microcomputers for generating IEPs and management of information on special students. However, there has been little, if any, attempt to investigate the effectiveness of the use of various software programs in assisting with the development of appropriate IEPs for exceptional children. Before widespread use of microcomputers can be advocated for generating IEPs, specific software packages need to be evaluated. Unfortunately, most software evaluation in education addresses questions of ease of use and what the microcomputer community calls "documentation". Documentation refers to the extent of information provided in the manual detailing the technical use of the program, and providing background information about the content of the program.

Two questions that need to be addressed before decisions are made

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to use microcomputer-generated IEPs in a school system are (1) How appropriate are microcomputer-generated IEPs in comparison to conventionally developed IEPs, and (2) What is the actual cost of generating IEPs through the use of a microcomputer and software program? The first question is concerned with quality control. Does the use of the microcomputer reduce the quality and/or effectiveness of the IEP? Implicit in this question is the need for each IEP to reflect the individual needs and an individual educational plan for each student.

Because the use of IEPs has been established by law and is not based on validated practice, it is important to address the question of appropriateness from a "relative" or comparison basis. It cannot be assumed that because an IEP has been developed in a conventional manner, i.e. teacher and committee, that it is appropriate or represents a quality IEP. In fact, a nationwide study conducted for the U.S. Department of Education by the Research Triangle Institute (Pyecha, 1980) found that the majority (60%) of IEPs being used in the public schools lacked internal consistency and were poorly developed.

With the answer to the appropriateness of the IEP in hand, the second question becomes very important. Most of the feasibility literature assumes that teacher time will be reduced. However, evidence to support this assumption is limited. Brown (1982) recently reported on the use of the CAMEO computer based IEP program indicating a 50% decrease in the IEP development time. The CAMEO program utilizes a centrally located Hewlett-Packard 3000 computer, not a microcomputer. Thus, generalization of these costs to microcomputer-generated IEPs is limited. This should not imply that a microcomputer application might take longer. In fact, microcomputers are usually located in local schools rather than in a central office, and a microcomputer program may actually take less teacher and clerical time.

Most IEP software programs are rather expensive when compared to conventional educational supplies and materials. Also, it appears that additional clerical time may be needed to implement a computer-based IEP program. Armed with imperical data from studies investigating appropriateness and cost, conclusions can be drawn for decision making by special education administrators.

The purpose of this article is to report on a pilot study comparing IEPs generated with the assistance of the UNISTAR I microcomputer software program (Lillie & Edwards, 1982) and teacher written IEPs. In this preliminary report, only the question of appropriateness as presented above has been addressed.

PROCEDURES

Software Program

UNISTAR I is a microcomputer-assisted IEP program for children with learning disabilities at the elementary through junior high school levels (Lillie & Edwards, 1982). Different versions of this software program are designed for use with Apple II or TRS 80 microcomputers with 48K memory. UNISTAR I provides a printed, pre-IEP which can be completed in the School Based Committee meeting or by the teacher. The main features of this software program include (1) all components required by law, (2) an intra-individual difference chart, (3) a list of present functioning level data, (4) the option to include goals and objectives in up to eleven academic and/or developmental ability areas (e.g., Reading Recognition, Expressive Language, Spelling, Math Reasoning), and (5) a bank of approximately 600 annual goals and short-term instructional objectives. The IEP report generated includes several series of goals and objectives based on the child's present functioning level. In the computer printout of the IEP (see attached printout) the goals and objectives begin at the present functioning level and include a sequence of goals and objectives for the remainder of that year and, in specific situations, for one additional year.

Sample IEPs

Twelve teacher-developed IEPs from the 1981-82 school year were randomly selected from three elementary schools in the Charlotte-Mecklenburg School System in Charlotte, North Carolina. Identification information and present functioning level information for each of the twelve students were taken from each of the selected IEPs and used to generate twelve microcomputer assisted IEPs using the UNISTAR I software program.

The Checklist for Documenting Appropriateness of the IEP (Turnbull, Strickland, and Brantley, 1982, pg 193) was adapted for use as a rating scale. Three of the four categories of appropriateness that are included in the checklist were used for the ratings. The category of Manageability was not used because the three items in that category appear to be more subjective than the items in the other categories. For each question on the checklist, a "yes" response was given a rating of 3, a "no" response a rating of 1, and a "sometimes" response a rating of 2. (see attached checklist).

Twelve special education teachers from several school systems in Northeastern North Carolina acted as raters. Each teacher independently rated the two IEPs on the same student - the teacher developed IEP and the microcomputer-generated IEP. Although the raters were not told which IEPs were teacher written and which IEPs were computer-generated, each type was easily identifiable.

Results

Figure 1 presents the results of the teachers' ratings. As can be seen, the teachers rated the UNISTAR I microcomputer generated IEPs significantly higher across each of the categories represented on the Turnbull, et. al. checklist of appropriateness.

Figure 1 about here

A "t test" was used to determine level of significance. The results, displayed in Table 1, show that the difference between the two mean rating scores was highly significant.

Table 1 about here

Discussion and Conclusions

As indicated earlier, this is a report of pilot data comparing a specific microcomputer software program for generating pre-IEPs (UNISTAR I) with teacher written IEPs. The interpretation of these data is limited for several reasons. Reliability of the rating procedure across raters and IEPs has not been established and the number of IEPs surveyed is small. In addition, results based on one specific school system's teacher written IEPs cannot be generalized to IEPs written by teachers in other school systems. A number of factors related to IEP appropriateness (such as the school system's IEP development guidelines, or release time provided for development of IEPs) will vary from school system to school system. Finally, it should be noted that results obtained from use of a specific software program can only apply to that particular software program and not to microcomputer-developed IEPs in general.

Given these limitations, the pilot comparison data indicate that microcomputer-generated IEPs, using the UNISTAR I software program, may be just as appropriate, if not more appropriate than teacher developed IEPs. However, additional and comprehensive studies are needed before generalizations can be made to verify these findings. Even then, generalizations will have to be made cautiously due to the varied nature of IEP development from school system to school system.

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Figure 1 Ratings Comparison

Teacher Written & Microcomputer-Generated IEPs

Table 1 t Test of

Total Mean Scores Differences

	Mean	N	T
Teacher	52.75	12	5.60
Computer	66.42		
SE=	2.44		P= .0003

FIGURE 12–1 Checklist for Documenting Appropriateness of the IEP

Student Name _____
Date of Committee Meeting _____
Committee Chairperson _____

Legal Requirements	Yes	No	Comments
1. Does plan include all information required by law?			
a. level of performance			
b. annual goals			
c. short-term instructional objectives			
d. schedules of evaluation			
e. procedures for evaluation			
f. related services			
g. specific special education			
h. extent of participation in the regular classroom			
i. projected dates for initiation and duration of services			
Relevance			
1. Are goals, objectives, evaluation procedures, placement, and services:			
a. appropriate to the handicap of the student?			
b. determined in consideration of identified strengths and weaknesses?			
c. appropriate to the student's level of performance?			
2. Are the specified evaluation procedures correlated with the goals and objectives?			
3. Do the minimum acceptable criteria stated in objectives seem realistic for the student?			
Manageability			
1. Is the anticipated progress proportional to the amount of instructional time available?			
2. Are the procedures scheduled for evaluation reasonable considering the time and methods involved?			
3. Has the method for provision of related services been determined?			
Clarity			
1. Is the terminology used in the plan understandable to all other committee members?			
2. Is the student's level of performance specified in terms of specific skill statements?			
3. Do short-term instructional objectives clearly state:			
a. the specific behavior to be required of the student?			
b. the condition under which the behavior is to occur?			
c. the minimum acceptable criteria for attaining the objectives?			
4. Do annual goals indicate what the student will be able to do when the IEP is terminated?			
5. Do evaluation procedures specify the type of evaluation to be used and, where appropriate, specific tests?			
6. Does the schedule of evaluation clearly indicate how often evaluation will occur?			
7. Is the special education to be provided stated in specific terms?			
8. Are related services clearly specified in terms of extent or amount of services to be provided?			

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Individualized Educational Plan for JOHN HINSON 4-7-82

I. SCHOOL IDENTIFICATION INFORMATION

1. School System Name: CHARLOTTE-MECKLENBERG SCHOOLS

2. School System Address
   Street: 123 VANCE STREET
   City: CHARLOTTE
   State: NC
   Zip: 75614

II. STUDENT IDENTIFICATION INFORMATION

1. Name: JOHN HINSON

2. Birthdate: 12/13/71

3. Grade Assignment: 5

4. School: ELM STREET ELEMENTARY

5. Student I.D. #: 12-452

6. Dominant Language: ENGLISH

7. Parent(s) Name(s): Father - JOHN HINSON
   Mother - ROBERTA HINSON

8. Address
   Street: 824 TEMPLE DR.
   City: CHARLOTTE
   State: NC
   Zip: 47514

9. Home Phone: 787-9127

10. Work Phone: Father -
    Mother -

III. I.E.P. IDENTIFICATION INFORMATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

1. Type of meeting: (circle one) Initial/Review/Exit

2. Meeting Date: _____

3. This plan is to begin on: _____

   and will end on: _____

STATEMENT OF PRESENT LEVEL OF EDUCATIONAL PERFORMANCE

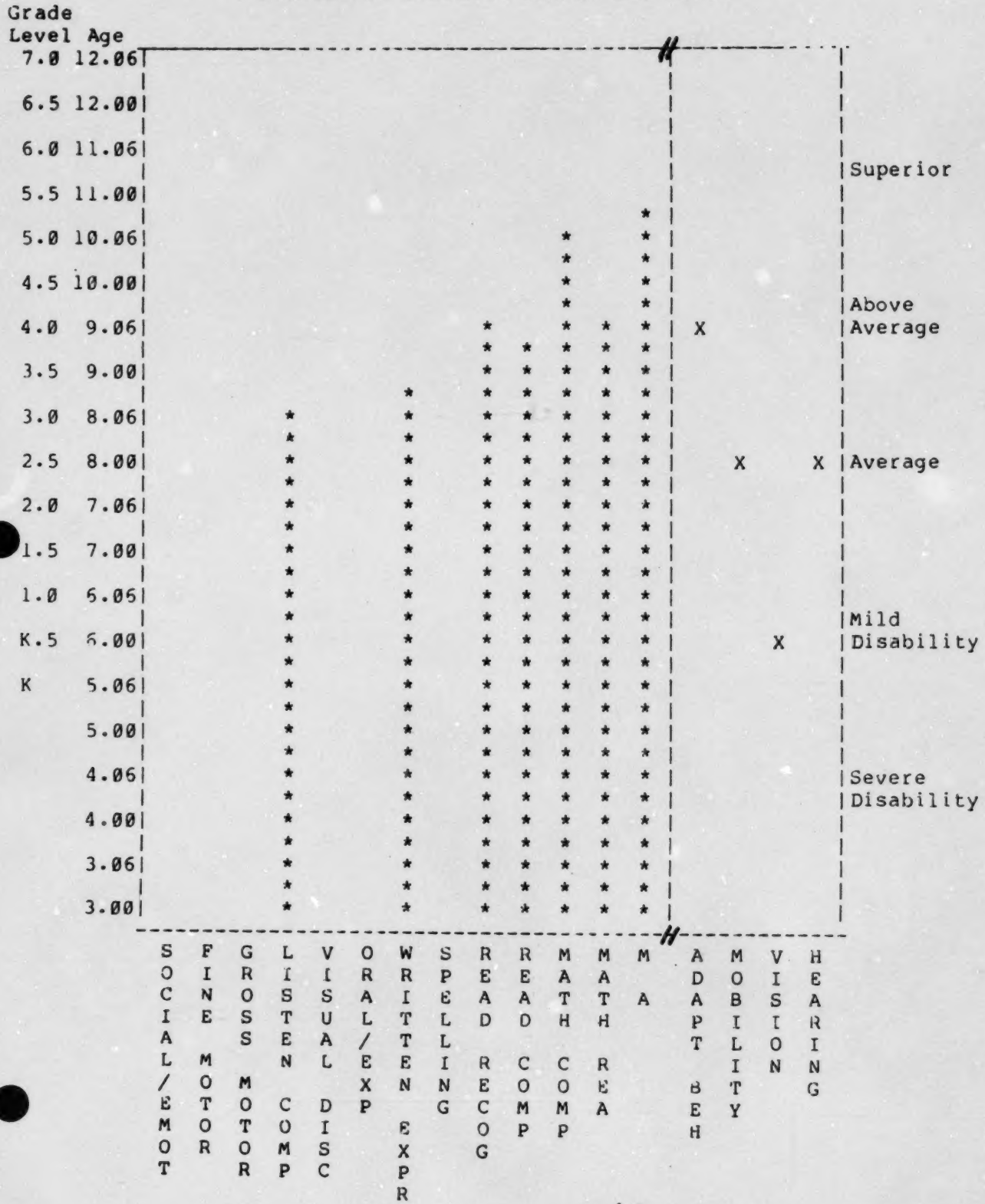
1. Sources of assessment data

SOURCE/TESTS	Date ADMINISTERED	LEVEL
LISTENING COMPREHENSION		
CAT	2-18-82	G.E.= 3.1
WRITTEN EXPRESSION		
T O W L	11-12-81	G.E.= 3.3
READING RECOGNITION		
WOODCOCK READING MASTERY	3-18-82	G.E.= 4.1
READING COMPREHENSION		
WOODCOCK READING MASTERY	3-18-82	G.E.= 3.8
MATH COMPUTATION		
CAT	12-12-81	G.E.= 5.2
MATH REASONING		
CAT	12-12-81	G.E.= 4.2
MENTAL ABILITY		
WISC-R - MENTAL AGE	6-2-81	A.E.= 10.09
ADAPTIVE BEHAVIOR		
FUNCTIONAL ADAPTIVE LEVEL	4-5-82	Above Average
MOBILITY		
FUNCTIONAL MOBILITY LEVEL	4-4-82	Average
VISION		
FUNCTIONAL VISION LEVEL	4-4-82	Mild Disability
HEARING		
FUNCTIONAL HEARING LEVEL	4-4-82	Average

2. Profile of Present Level of Educational Performance: ON NEXT PAGE

I.E.P. FOR JOHN HINSON

PROFILE OF PRESENT FUNCTIONING LEVEL



2. Additional Statements on Present Level of Educational Performance (write in at I.E.P. Meeting)

V. ANNUAL GOALS AND SHORT-TERM INSTRUCTIONAL OBJECTIVES ARE ATTACHED AT THE END OF THIS REPORT

VI. STATEMENT OF SPECIFIC EDUCATIONAL SERVICES, WHEN INITIATED AND DURATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

Type of Service/Placement*	Personnel	Frequency and Duration	Date Service Begins

*such as: resource room, speech therapy, consultation, physical therapy, self-contained class, work study, hospital, homebound, vocational skills centers, special physical education, mobility training, etc.

VII. STATEMENT OF EXTENT TO WHICH STUDENT WILL BE ABLE TO PARTICIPATE IN REGULAR EDUCATION PROGRAMS.

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

Type of Regular Educational Programs	Personnel	Total Hours Per Week

I. STATEMENT OF PROPOSED EVALUATION PROCEDURES AND CRITERIA

Through teacher observation and testing a judgement will be made as to when each short-term instructional objective has been met. At the time of judged accomplishment, the date will be entered in Section VI of this plan under the 'Actual Accomplishment Date' Column in the box next to that objective. All annual goals and short-term instructional objectives will be reviewed once a year and up-dated as appropriate.

IX. TEAM PARTICIPANTS

TO BE FILLED OUT AT PLACEMENT/IEP MEETING

Name	Role *	Signature

* Chairperson, teacher, L.D. specialist, parent, student, psychologist, guidance counselor, principal, etc.

X. STATEMENT OF SCHOOL SYSTEM APPROVAL AND PARENT PARTICIPATION

TO BE COMPLETED AT PLACEMENT/IEP COMMITTEE MEETING

1. This plan was completed and agreed upon by the placement team.

   Team Chairperson:_____
   Signature/Date

2. I have participated in this placement / IEP committee meeting and understand the Individualized Education Program presented herein.

   Parent/Student/Guardian/Surrogate:_____
   Signature/Date

LISTENING COMPREHENSION

LISTENING COMPREHENSION GOAL 3.1 The Learner Will Increase Ability To Listen Critically In Order To Draw Conclusions and Make Judgements.

Short-Term Instructional Objectives:

3.1.1 PAD __/__/__ AAD __/__/__ After listening to a story, is able to discuss decisions made by a character with an emphasis on evaluating the quality of the decision.

Criteria:_____

3.1.2 PAD __/__/__ AAD __/__/__ After hearing a story with two different endings, is able to identify the better ending and tell why.

Criteria:_____

3.1.3 PAD __/__/__ AAD __/__/__ After hearing a story that presents a dilemma, is able to draw conclusions based on the facts presented.

Criteria:_____

LISTENING COMPREHENSION GOAL 3.2 The Learner Will Increase Ability To Listen Creatively In Order To Develop Solutions To Problems and To Formulate New Ideas

Short-Term insrtructional objectives:

3.2.1 PAD __/__/__ AAD __/__/__ Is able to propose solutions to classroom or school-related problems presented by the teacher or classmates.

Criteria:_____

3.2.2 PAD __/__/__ AAD __/__/__ After hearing a description of a fictitious family problem or a community problem, is able to give possible solutions to the problem.

Criteria:_____

3.2.3 PAD __/__/__ AAD __/__/__ After hearing part of a fairy tale with the plot changed, is able to finish the story with own ideas.

Criteria:_____

3.2.4 PAD __/__/__ AAD __/__/__ After hearing the ending of a story, is able to construct an appropriate beginning.

Criteria:_____

WRITTEN EXPRESSION

WRITTEN EXP./SPELLING GOAL 3.1 - The Learner Will Be Able To Write Legibly In Manuscript.

Short-Term Instructional Objectives:

3.1.1 PAD __/__/__ AAD __/__/__ Is able to write name legibly in manuscript.

Criteria:_____

3.1.2 PAD __/__/__ AAD __/__/__ Is able to write at least two legible sentences in manuscript with some consistency in formation, size, and spacing.

Criteria:_____

WRITTEN EXP./SPELLING GOAL 3.2 - The Learner Will Be Able To Write Complete Sentences.

Short-Term Instructional Objectives:

3.2.1 PAD __/__/__ AAD __/__/__ Is able to dictate a complete sentence for someone else to write down.

Criteria:_____

3.2.2 PAD __/__/__ AAD __/__/__ Is able to arrange word cards to form sentences.

Criteria:_____

3.2.3 PAD __/__/__ AAD __/__/__ Is able to write a complete sentence containing an appropriate subject and predicate.

Criteria:_____

WRITTEN EXP./SPELLING GOAL 3.3 - The Learner Will Increase Ability To Spell To An Average Third Grade Level.

Short-Term Instructional Objectives:

3.3.1 PAD __/__/__ AAD __/__/__ Is able to use a dictionary to correct misspellings.

Criteria:_____

3.3.2 PAD __/__/__ AAD __/__/__ Is able to spell commonly encountered words that have a gh spelling for f.

Criteria:_____

3.3.3 PAD __/__/__ AAD __/__/__ Is able to spell commonly encountered words that use morphemes to make structural changes, such as dishes, cries, faster, beginning, reading, etc..

Criteria:_____

3.3.4 PAD __/__/__ AAD __/__/__ Is able to use syllabication as an aid for spelling recall, e.g., fol low, to day, sav ing, reg u lar, etc..

Criteria:_____

READING RECOGNITION

READING:RECOGNITION GOAL 4.1 - The Learner Will Increase Understanding and Use of Special Types of Word Groups.

Short-Term Instructional Objectives:

4.1.1 PAD __/__/__ AAD __/__/__ Is able to recognize signal words such as who, what, where, etc..

Criteria:_____

4.1.2 PAD __/__/__ AAD __/__/__ Is able to understand and use synonyms by matching the words.

Criteria:_____

4.1.3 PAD __/__/__ AAD __/__/__ Is able to understand and use antonyms by matching the words.

Criteria:_____

4.1.4 PAD __/__/__ AAD __/__/__ Is able to understand and use homonyms by writing sentences which depict the different spelling and meanings.

Criteria:_____

READING:RECOGNITION GOAL 4.2 - The Learner Will Increase Ability To Use Structural Analysis In Identifying Words.

Short-Term Instructional Objectives:

4.2.1 PAD __/__/__ AAD __/__/__ Is able to recognize and use compound words by matching the two word parts that form the larger word.

Criteria:_____

4.2.2 PAD __/__/__ AAD __/__/__ Is able to recognize and use inflectional ending by selecting the correct word to fill in the blank from two given options.

Criteria:_____;

4.2.3 PAD __/__/__ AAD __/__/__ Is able to recognize and use contractions in context.

Criteria:_____

4.2.4 PAD __/__/__ AAD __/__/__ Is able to recognize and understand syllable concepts by indicating number of word parts.

Criteria:_____

READING COMPREHENSION

READING:COMPREHENSION GOAL 3.1 - The Learner Will Increase Literal Comprehension of Reading To A Third Grade Level.

Short-Term Instructional Objectives:

3.1.1 PAD __/__/__ AAD __/__/__ Is able to describe the behavior, feelings, motives, and reactions of story characters from a given story.

Criteria:_____

3.1.2 PAD __/__/__ AAD __/__/__ When given a concept word such as weather, is able to respond with words which are related, e.g., snow, rain, etc..

Criteria:_____

3.1.3 PAD __/__/__ AAD __/__/__ Is able to identify the cause and the effect in a story of at least eleven sentences long.

Criteria:_____

READING:COMPREHENSION GOAL 4.1 - The Learner Will Increase Ability In Literal Reading Comprehension To A Fourth Grade Level.

Short-Term Instructional Objectives:

4.1.1 PAD __/__/__ AAD __/__/__ Is able to put statements in proper sequence when given out of sequence.

Criteria:_____

4.1.2 PAD __/__/__ AAD __/__/__ Is able to write a set of printed

directions and give to another person orally.

Criteria:_____

4.1.3 PAD __/__/__ AAD __/__/__ Is able to recognize the main idea of a story which is at least ten paragraphs long.

Criteria:_____

4.1.4 PAD __/__/__ AAD __/__/__ Is able to tell how two stories or novels are alike and how they are different.

Criteria:_____

READING:COMPREHENSION GOAL 4.2 - The Learner Will Increase Inferential Comprehension of Reading To A Fourth Grade Level.

Short-Term Instructional Objectives:

4.2.1 PAD __/__/__ AAD __/__/__ Is able to identify a cause and state many possible effects, e.g., no more gasoline.

Criteria:_____

4.2.2 PAD __/__/__ AAD __/__/__ Is able to create a reasonable title for a poem or short story that has a similar meaning as real title.

Criteria:_____

4.2.3 PAD __/__/__ AAD __/__/__ Is able to draw appropriate conclusions to unfinished stories.

Criteria:_____

4.2.4 PAD __/__/__ AAD __/__/__ Is able to tell the meaning of some examples of figurative speech, e.g., he was the apple of her eye.

Criteria:_____

MATH COMPUTATION

MATH:COMPUTATION GOAL 5.1 - The Learner Will Increase Computation Skills In Solving Multi-Digit Multiplication Problems.

Short-Term Instructional Objectives:

5.1.1 PAD __/__/__ AAD __/__/__ Can estimate the product of 2 two-digit whole numbers by rounding both and multiplying mentally, e.g., 28 x 32 is about the same as 30 x 30 which is 900.

Criteria:_____

5.1.2 PAD __/__/__ AAD __/__/__ Is able to demonstrate that tens times tens produces hundreds.

Criteria:_____

5.1.3 PAD __/__/__ AAD __/__/__ Is able to give examples of problems which require multiplying two multi-digit factors for their solutions.

Criteria:_____

5.1.4 PAD __/__/__ AAD __/__/__ Is able to solve any realistic problem dealing with multiplication of whole numbers.

Criteria:_____

MATH REASONING

MATH: REASONING GOAL 4.1 - The Learner Will Increase Use and Understanding of Charts.

Short-Term Instructional Objectives:

4.1.1 PAD __/__/__ AAD __/__/__ Is able to collect information and present it in a pictograph.

Criteria:_____

4.1.2 PAD __/__/__ AAD __/__/__ Is able to interpret information which someone else has presented in a pictograph.

Criteria:_____

4.1.3 PAD __/__/__ AAD __/__/__ Is able to construct and interpret simple bar graphs.

Criteria:_____

4.1.4 PAD __/__/__ AAD __/__/__ Is able to solve problems using information presented on a bar graph.

Criteria:_____

MATH: REASONING GOAL 4.2 - The Learner Will Increase Ability To Use Numbers and Numeration To A Forth Grade Level.

Short-Term Instructional Objective:

4.2.1 PAD __/__/__ AAD __/__/__ Is able to identify the place value of any digit in a whole number with up to five digits.

Criteria:_____

4.2.2 PAD __/__/__ AAD __/__/__ Is able to round numbers to the nearest tenth and to the nearest one-hundreth.

Criteria:_____

4.2.3 PAD __/__/__ AAD __/__/__ Is able to recognize and write symbols for fractions.

Criteria:_____

4.2.4 PAD __/__/__ AAD __/__/__ Is able to use concrete materials to demonstrate understanding of a fraction as one or more equivalent parts of a group.

Criteria:_____

MATH: REASONING GOAL 4.3 - The Learner Will Increase Ability To Identify and Use Standard Units of Measure To A Fourth Grade Level.

Short-Term Instructional Objectives:

4.3.1 PAD __/__/__ AAD __/__/__ Is able to estimate and measure designated properties (length, width, girth) of familiar objects to the nearest centimeter.

Criteria:_____

4.3.2 PAD __/__/__ AAD __/__/__ Is able to use models to demonstrate understanding of "perimeter"', "area", and "circumference".

Criteria:_____

4.3.3 PAD __/__/__ AAD __/__/__ Is able to identify the liter and the quart as units used to measure capacity.

Criteria:_____

4.3.4 PAD __/__/__ AAD __/__/__ Is able to identify the gram, kilogram and pound as units used to measure weight.

Criteria:_____

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